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A WEBSITE DISPLAY EMULATING A DISPLAY OF AN APPLICATION PROGRAM

TECHNICAL FIELD

The present invention relates in general to a graphical display of a website. More particularly, the present invention relates to configuring the graphical display of a website to emulate the look and feel of an application program.

BACKGROUND

The graphical display of a typical application program provides a continuity of appearance that is comforting to the user. By way of example, the display of an application program may include objects or information that are dynamically modified within a seemingly fixed background. The appearance of a fixed background may be accomplished by way of common reference points that remain on the display screen as the other object or information are modified. In addition, the display of an application program typically includes a four-sided border that provides a finite and concrete appearance.

In contrast to an application program, a website tends to provide a graphical display that is not perceived by the user as being continuous, finite or concrete. A website may comprise multiple webpages, each webpage containing different data elements. Modern web browsers operate to load different webpage in succession into a main display area. Successive loading of webpages results in a discontinuity of appearance because no common reference point remains within the main display area as the first webpage disappears and the second webpage is loaded. In some cases, a disconcerting whitespace may even be displayed between successive webpages.

In addition, most webpages lack a clearly-defined right or bottom edge. The designer of a webpage thus has the ability to design a display that is infinitely tall and/or wide.

Web browsers are typically configured to include scroll bars along the right and bottom edges of the display area in order to permit the user to view data that does not fit within the display area. Accordingly, depending on the size of the display screen and the display area of the browser, the appearance of the webpage may differ each time it is accessed by the user.

5   Therefore, there is a need in the art for configuring the graphical display of a website to have the look and feel of an application program.

SUMMARY OF THE INVENTION

Generally stated, the present invention is directed to simulating the look and feel
10   of an application program within a website. A web browser retrieves a border webpage file that contains an instruction set for creating a border webpage that include a four-sided border. The four-sided border surrounds a main display area within the web browser display window. The four-sided border mimics a four-sided border that typically appears around the display of an application program. The four-sided border is created through the use of a table construct that is
15   preferably dimensioned to have three rows and three columns. This table configuration yields a single center cell surrounded by eight border cells. The center cell may be used as the main display area of the web browser window. The center cell of the table may contain an inline frame for displaying a content webpage, while the border cells may be used for the display of border images that combine to form the four-sided border. The border images may comprise
20   repeating images that are tiled end-to-end throughout each border cell.

One embodiment of the invention may include various selectable graphic objects positioned external to the four-sided border. For example, the web browser window may be partitioned into two frames, a first frame containing a webpage that includes the selectable graphic objects and the second frame containing the border webpage with its four-sided border
25   and inline frame. The selectable graphic objects may be used to emulate a table of contents, selectable menu, tree structure, or other application functions. Each selectable graphic object may be selected by way of a user input command in order to navigate between different content webpages within a website, or to duplicate other application-like functionality. In the event that a selectable graphic object is used to navigate from one content webpage to another, the border
30   webpage displaying the four-sided border may remain static, while the content webpage

displayed in the inline frame changes. This provides continuity in appearance as a user navigates from one page to the next.

That the invention improves upon the drawbacks of prior website displays and accomplishes the advantages described above will become apparent from the following detailed

5   description of the exemplary embodiments and the appended drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating an exemplary operating environment for the exemplary embodiments of the present invention.

10   FIG. 2 is an illustration of an exemplary graphical display of a web site within a web browser in accordance with an exemplary embodiment of the present invention.

FIG. 3, comprising FIG. 3A and FIG. 3B, illustrates a website display that has been configured to resemble the display of an application program in accordance with an exemplary embodiment of the present invention.

15   FIG. 4 is a flowchart illustrating operation of an exemplary method for configuring a website display to resemble the display of an application program.

DETAIELED DESCRIPTION OF A PREFERRED EMBODIMENT

The present invention is directed to displaying content in a web browser in such a

20   manner as to emulate the look and feel of an application program. In accordance with an exemplary embodiment of the invention, a plurality of webpages are displayed in the window of a web browser in such a way as to produce a graphical display having a content display area bounded by a four-sided border. The four-sided border resembles a border surrounding the display of a typical application programs. In an exemplary embodiment, webpages are defined

25   by webpage data files written in hypertext markup language ("HTML"). However, alternate embodiments may include webpage data files written using extensible markup language ("XML"), server-parsed hypertext markup language ("SHTML"), Javascript, Java, and so on. Thus, it is to be understood that the scope of the present invention is not restricted by a particular programming language and any references herein to HTML should be read by way of illustration

30   and not by way of limitation.

Referring now to the drawings, in which like numerals represent like elements throughout the several figures, aspects of the present invention and a suitable operating environment will be described. The following sets forth the best mode of the invention as known to the inventors.

5   FIG. 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. While the invention will be described in the general context of a web browser application program executed by a personal computer in communication with a network, those skilled in the art will recognize that the invention may also be implemented in other environments and in

10   combination with other program modules. Generally, program modules include routines, programs, components (such as stacks or caches), data structures, etc., that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable

15   consumer electronics, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communication network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

20   As shown in FIG. 1, the present invention may be implemented in a traditional client-server environment. In accordance with an exemplary embodiment of the present invention, a border webpage data file **103A**, or other data file, may produce a border webpage **105A** when loaded into a web browser **112**. The border webpage **105A** includes table construct **102**. The table **102** is preferably configured with three rows and three columns of cells,

25   comprising a single center cell and eight border cells. Border images are displayed in the eight border cells. The border images combine to form the four-sided border **107**. It should be appreciated that reference to a four-sided border is intended to signify a border that surrounds a main display area within a web browser. Accordingly, any border having greater or fewer than four sides that surrounds a main display area within a wed browser is also contemplated by the

30   invention. The center cell of the table **102** includes an inline frame for the display of a content webpage **105B**. The content webpage **105B** results from loading a content webpage data file

103B into the inline frame of the border webpage **105A**. The combination of the border webpage **105A** and the content webpage **105B** results in a graphical display for a website that emulates the display of an application program.

Typically, webpage data files **103A&B** are stored on a server **104** connected to a network **106**. Multiple related webpages may comprise a website. Alternate embodiments may store webpage data files **103A** and/or **103B** locally at the client **108A**, or as distributed files on different elements of the network **106**. The network **106** may comprise an internet, an intranet, a telephone wireline network, a cellular network, a broadband network, or any other wire-based and/or wireless network. The network **106** also connects to clients **108A** – **108N**, which are operated by end users. As mentioned, clients **108A** – **108N** may access webpage data files **103A&B** by using a web browser **112**, or similar application program, to connect to the server **104** via the network **106**. The web browser **112** interprets a webpage data file **103A&B** and displays a resulting webpage **105A&B**. Typically, an end user may view the graphical display of a webpage **105A&B** through a display monitor **116** connected to the client **108A**.

FIG. 2 is an illustration of an exemplary graphical display of a web site within a web browser **112** in accordance with an exemplary embodiment of the present invention. To achieve the appearance of a four-sided border surrounding a webpage that normally has no right or bottom boundary, an exemplary embodiment of the present invention makes use of a border webpage **105A** and a content webpage **105B** displayed within the web browser window **201**. The border webpage **105A** includes a table construct **102** consisting of multiple cells. In one embodiment, the table **102** may be defined to consist of nine cells, organized in three columns by three rows. Such a table configuration results in a single center cell **203** bounded by eight border cells **202A-H**. The border cells **202A-H** of the table **102** may be used for the display of border images, which combine to produce the four-sided border. The center cell **203** may include an inline frame that is used for displaying a content webpage **105B**. An inline frame is an HTML element that is well known in the art. As shown in FIG. 2, the center cell **203** may be sized to occupy the majority of the border webpage **105A**.

Optionally, the web browser window **201** may be partitioned into a first frame **204A** and a second frame **204B**, or any other number of frames. The border webpage **105B** may be displayed in the second frame **204B**, while one or more selectable graphic objects **240** may be displayed in the first frame **204A**. Briefly, a selectable graphic object **240a** may configured to

include hyperlinks and may serve to emulate a function of an application program. The concept of selectable graphic objects will be discussed in more detail with respect to FIG. 3.

The dimensions of the table 102 may be set to equal the entire display area of the web browser window 201 or the frame 204B in which the border webpage 105A is displayed. In an exemplary embodiment, the HTML commands "<table width=100%>" and "<table height=100%>" may be used to define the table dimensions relative to the size of the display area, rather than as absolute values. Dimensioning the table relative to the size of the display area ensures that the table 102 resizes proportionately when the web browser window 201 is resized.

A scripting language, such as JavaScript, may be used in an exemplary embodiment to ensure that the web browser window 201 may not be resized below a certain point. This minimum resize point may be defined as the size at which the browser would normally cause scroll bars to appear within the web browser window 201. By limiting the minimum size of the web browser window 201, scroll bars will be suppressed and the content webpage 105B will be resized so that its contents will be visible within the center cell 203 of the table 102. The above-mentioned scripting may be implemented in a manner well known to those skilled in the art.

The individual cells of the table 102 may be defined in such a manner that the center cell 203 is of a variable size, and all border cells 202A-H are of a fixed size in at least one dimension. In this manner, the dimensions of the center cell 203 are directly tied to the dimensions of the web browser window 201 or the frame 204B. Those skilled in the art will appreciate that the dotted lines defining the table 102 in FIG. 2 are for illustrative purposes only. The table 102, including all cell borders and the overall table border, may be made to be invisible when displayed in order to provide the illusion of a single display area with no visible joins between cells.

The four corner border cells 202A, 202C, 202E, and 202G of the table 102 may each display a unique border image designed to mimic a corner of a four-sided border. That is, the upper left corner border cell 202A may contain a border image 207A designed to mirror the upper left corner of a four-sided border, the upper right corner border cell 202C may contain a border image 207C mimicking the upper right corner of a four-sided border, and so on. The upper left corner border cell 202A is located in row 1, column 1 of the table 102. The upper

right corner border cell **202C** is located in row 1, column 3 of the table **102**. The lower right corner border cell **202E** is located in row 3, column 3 of the table **102**. The lower left corner border cell **202G** is located in row 3, column 1. Depending on the desired border, the four corner border cells **202A, 202C, 202E,** and **202G** may display identical border images or different border images. For example, the four corner border cells **202A, 202C, 202E,** and **202G** shown in FIG. 2 each display a different border image, namely border images **207A, 207C, 207E, and 207G** respectively, because the shape of each border image must be rotated to match each corner.

The top center border cell **202B** and bottom center border cell **202F** may both extend along the entire width of the center border cell **203**. The top center border cell **202B** is located in row 1, column 2, while the bottom center border cell **202F** is located in row 3, column 2 of the table **102**. Similarly, the left center border cell **202H** (located in row 2, column 1) and right center border cell **202D** (located in row 2, column 3) may each extend along the height of the center cell **203**. Horizontal border images **207B&F** are displayed in both the top and bottom center border cells **202B&F**, respectively, extending across the entire length thereof. The horizontal border images **207B&F** displayed in the top and bottom center border cells **202B&F** may be identical, as shown in the figure. Alternate embodiments may display different horizontal border images in the top center border cell **202B** and the bottom center border cell **202F**.

A single horizontal border image **207B** is shown in the figure. However, using a single horizontal border image to fill a border cell may lead to distortion of the horizontal border image if the web browser window **201** and table **102** are resized in the horizontal direction. Therefore, the horizontal border image **207B** may actually comprise multiple discrete horizontal border images that are repeated end-to-end within the top center border cell **202B**. In the likely event that the top center border cell **202B** does not accommodate an even number of discrete horizontal border images, one or more of the discrete horizontal border images may be truncated. The horizontal border image **207F** within the bottom center border cell **202F** may also comprise repeated discrete horizontal border images. The process of repeating an image end-to-end is commonly known as "tiling." Tiling a horizontal border image **207B&F** within a border cell provides an illusion of a seamless horizontal border image within that border cell and reduces distortion due to manipulating the dimensions of the image itself.

The vertical border images **207D&H** shown in the right center border cell **202H** and the left center border cell **202H**, respectively, may also be tiled to reduce image distortion when the browser window **201** and the table **102** are resized in the vertical direction. The vertical border images **207D&H** displayed in the right and left center border cells **202D&H** may be identical, as shown in the figure. Alternate embodiments may display different vertical border images in the right center border cell **202D** and left center border cell **202H**.

In the event that the web browser window **201** or frame **204B** displaying the border webpage **105A** is resized, the table **102** of the border webpage **105A** is necessarily resized as well. According to one embodiment of the invention, when the table **102** is resized, the individual cells **202A-H** of the table **102** may be resized in different manners, based on their position within the table **102**. For example, as the web browser window **201** or frame **204B** changes in size, cells occupying the first and third rows of the table **102** may be made to maintain a constant height, while cells occupying the second row of the table **102** may be resized in height. Similarly, cells in the first and third columns of the table **102** may be made to maintain a constant width, while the width of cells in the second column of the table **102** may change along with the width of the web browser window **210** or the frame **204B**. Table 1 below summarizes the fixed and variable dimensions of each cell

Table 1 – Fixed/Variable Dimensions of Cells		
Cell	**Width**	**Height**
Upper left border **202A**	Constant	Constant
Top center border **202B**	Variable	Constant
Upper right border **202C**	Constant	Constant
Right center border **202D**	Constant	Variable
Lower right border **202E**	Constant	Constant
Bottom center border **202F**	Variable	Constant
Lower left border **202G**	Constant	Constant
Left center border **202H**	Constant	Variable
Center **203**	Variable	Variable

Using the fixed and variable cell dimensions shown above in Table 1, will allow the thickness of the four-sided border **107** to remain constant as it expand or contracts in height and/or width to fit the display area of the web browser window **201** or the frame **204B**. Expanding the center border cells **202B, 202D, 202F and 202H** in only one dimension avoids any undue warping or stretching of the tiled border images. As each center border cell **202B, 202D, 202F and 202H** is resized, the border image contained within that cell is retiled accordingly. The center cell **203** may be resized along the horizontal and vertical directions in direct proportion to any resizing of the table **102**. As shown in Table 1 above, no corner border cells **202A, 202C, 202E, 202G** are resized in an exemplary embodiment so as to maintain consistent corner border images **207A, 207C, 207E, and 207G**. Alternate embodiments may resize various cells of the table **102** in different manners without departing from the spirit or scope of the invention.

As mentioned, one or more selectable graphic objects **240** may be displayed in a first frame **204A** of the web browser window **201**. The selectable graphic objects **240** may be used within the web browser **112** to enhance the look and feel of an application program. Selectable graphic objects **240** may, for example, correspond to the menu layout of many common application programs. By way of illustration, multiple selectable graphic objects **240** may be used to represent a menu layout, wherein each selectable graphic object may bear a hierarchical relationship to other selectable graphic objects. For example, multiple selectable graphic objects **240** may be arranged in a "tree" structure, wherein a first level of selectable graphic objects **240** represents a geographical region, a second level of selectable graphical objects **240** represents individual cities within the geographical region, a third level of selectable graphic objects **240** represents different buildings within each city, and a fourth level of selectable graphic objects **240** represents floors within each building. Within a tree-like structure, a subordinate selectable graphic object **240** may be hidden from view until the corresponding dominant selectable graphic object is selected. The selectable graphic objects **240** may contain hyperlinks used to navigate from one content webpage **105B** to another.

Selectable graphic objects **240** may also be displayed internal to the four-sided border **107**. When selectable graphic objects **240** are displayed inside the four-sided border **107** and are used for navigation between content webpages **105B**, any subsequently loaded content

webpage **105B** should be loaded into the center cell **203** (i.e., into the inline frame) of the table **102** of the border webpage **105A**.

FIG. 3, comprising FIG. 3A and FIG. 3B, illustrates a website display that has been configured to resemble the display of an application program in accordance with an exemplary embodiment of the present invention. Beginning with FIG. 3A, a web browser window **201** is shown having a first frame **204A** and a second frame **204B**. Displayed in the first frame **204A** is a first webpage that includes several selectable graphic objects **240** arranged in a tree structure. Although not plainly apparent to the user, displayed in the second frame **204B** is a border webpage **105A** and a content webpage **105B**. The border webpage **105A** displays the four-sided border **107**. The four-sided border is made up of individual border images displayed in the border cells of an invisible table construct. An inline frame is included in the center cell of the invisible table. The content webpage **105B** is displayed by the inline frame. Thus, the content webpage **105B** is surrounded by a border, which helps to provide the website with a look and feel of an application program.

The selectable graphic objects **240** may be configured with hyperlinks to allow the user to enter navigation commands. In particular, a prior selection of the "Atlanta – R&D Facility" selectable graphic object **240A** triggered the activation of a hyperlink to the content webpage **105B** that is displayed in the second frame **204A**. Within the tree structure of selectable graphic objects **240**, selection of a dominant graphical object may cause the display of a previously hidden subordinate graphical object. By way of illustration, the "1st Floor" selectable graphic object **204B** is flanked by a "+" icon to indicate that subordinate graphical images are hidden from view. Selection of the "1st Floor" selectable graphic object **204B** will result in the display of a "Participating Vendors" selectable graphic object **240C**, a "AHU-1" selectable graphic object **204D**, and a "Main Conference Room" selectable graphic object **204E**, as is shown in FIG. 3B. As is also shown in FIG. 3B, selection of the "Main Conference Room" selectable graphic object **204E** results in the display of additional subordinate selectable graphic objects and the activation of a hyperlink to the new content webpage **105B** displayed in the second frame **204B**. Thus, it may be seen that the selectable graphic objects in the first frame **204A** may be used to navigate among content webpages **105B** in the second frame **204B**, while the border webpage **105A** and its four-sided border **107** remain static.

FIG. 4 is a flowchart illustrating an exemplary method **400** for configuring the display of a website with a four-sided border. The flowchart begins at starting block **401** and proceeds to step **405**, where a user operates a web browser to access a website that is defined by an underlying border webpage data file and a plurality of content webpage data files. The web browser loads the border webpage data file in step **410**. In step **415,** the web browser interprets the border webpage data file and displays the resulting border webpage. The border webpage includes a table construct that preferably comprises a center cell and a plurality of border cells. Border images may be displayed within the border cells of the table in such a manner as to form a four-sided border around the center cell. Border images may be defined by any image data file format, such as "jpeg," "bmp," "pict," "tiff" "gif," etc. The center cell may be configured to include an inline frame that functions as an independent web browser. At step **420**, a content webpage data file is retrieved and interpreted by the inline frame and the resulting content webpage is displayed in the center cell of the table.

At step **425** the web browser awaits a user input comprising a navigation command or a window/frame resize command. A window/frame resize command instructs the web browser to alter the size of the web browser display window, or a frame thereof, and its contents. A navigation command instructs the browser to access and interpret another content webpage data file and to display the resulting content webpage. At step **430**, the web browser determines whether a received user input command comprises a navigation command. If so, the method progresses to step **435** where another content webpage is loaded into the center cell of the table of the border webpage. It should be noted that the border webpage remains static as the navigation command is executed. After completing a navigation command at step **435**, the method returns to step **425** to poll for further user input.

If it is determined at step **430** that the user input command is not a navigation command, the method proceeds to step **440**, where it is determined whether the input command is a window/frame resize command. If a window/frame resize command is detected, a determination may be made at step **445** as to whether execution of the resize command would cause the web browser window or frame to be smaller than a predetermined minimum size. As previously mentioned, the predetermined minimum size may be set in order to prevent the web browser from automatically displaying scroll bars. If execution of the resize command would cause the web browser window or frame to be smaller than the predetermined minimum size, the

browser window or frame is instead resized to the predetermined minimum size at step **450**. However, if execution of the resize command would not cause the web browser window or frame to be smaller than the predetermined minimum size, the resize command is executed at step **455**.

When the web browser window or frame thereof is resized at step **450** or step **455**, the border webpage is resized accordingly, including its table and the inline frame, at step **460** and the border images within the border cells of the table are retiled at step **465**. Those skilled in the art will appreciate that resizing the web browser window or frame, the border webpage, and the content webpage may, in practice, occur at the same time or in a difference sequence than described above. Thus, the above description is provided merely to illustrate the logical operation of an exemplary embodiment of the invention and is not intended to be limiting as to the sequence or timing of the steps. Following step **460**, the method is repeated by returning to step **425** and polling for further user input.

From a reading of the description above pertaining to exemplary embodiments of the present invention, modifications and variations thereto may become apparent to those skilled in the art. For example, those skilled in the art will appreciate that the present invention may be practiced in conjunction with any program module capable of displaying webpages and is thus not limited by the above recitations of a web browser. Many other modifications and additional features will also become evident in view of the preceding description of exemplary embodiments of the invention. It should be appreciated that many features and aspects of the present invention are described above by way of example only and are therefore not intended to be interpreted as required or essential elements of the invention, unless so stated. Accordingly, the foregoing relates only to certain embodiments of the invention and numerous changes may be made therein without departing from the spirit and scope of the invention as defined by the following claims.